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THE CARNIVAL AND HORSE-RACES, AT ROME.

THE DECORATED HORSES.

THE Carnival at Rome is in many respects a singular holiday,—singular for the splendour and the absurdity which distinguish it, and for the irrepressible eagerness with which the inhabitants join in it. A lively writer, Miss Waldie, remarks:—

The Romans, in throwing off the shackles of moral restraint, do not seem to have gained much gaiety or pleasure by their release. Nothing is more striking to a stranger than the sombre air which marks every countenance, from the lowest to the highest, in Rome. The faces even of the young are rarely lighted up with smiles; a laugh is seldom heard; and a merry countenance strikes us with amazement, from its novelty. Yet, will it be believed that this serious, this unsmiling people, rush into the sports of the carnival with a passionate eagerness far surpassing all the rest of the Italians? It seems as if some sudden delirium had seized them. All ranks, classes, ages, and sexes, under the same intoxication of spirits, parade the streets. The poor starve, work, pawn, beg, borrow, steal, —do anything, to procure a mask and a dress; and when the bell of the Capitol, after mid-day, gives licence to the reign of folly to commence, the most ridiculous figures issue forth,—wild for their favourite diversion.

The carnival at Rome lasts, in some degree or other, almost from Christmas to the commencement of Lent; but it is only during the last week of that period, that masking is allowed in the open streets. The windows and balconies are hung with rich draperies, and filled with gaily-dressed spectators; and indeed, the preparation for these festivities occasions no small amount of profit to many parties. For several days previously the shops are converted into wardrobes, whole streets are lined with masks and dominoes, the robes of sultans, and jackets of pantaloons; canopies are suspended, scaffolds are erected for the accomodation of those who have not the interest to obtain admission to the houses and palaces, along the whole line of the Corso (the principal street wherein the festivities are held); while double rows of chairs are placed along the causeway, and hired by the week, by the less opulent spectators.

On the first day of the carnival, when all the preparations are not quite completed, women are seen at their doors, making harlequins' jackets, and pantaloons' trowsers,—children are making paper masks and wooden swords, and all is bustle and anticipation, when, at the firing of a cannon, all the shops are closed, and the sports commence. All along the centre of the Corso, for more than a mile, is a line or procession of the carriages of the princes, potentates, ambassadors, &c. On each side of that central line is another line of the carriages of all the foreign nobility who may happen to be then in Rome, and who may choose to exhibit themselves on the occasion. Then come rows of cavalry, placed probably both to preserve order, and to add to the gorgeousness of the scene. Lastly there are pedestrians of every rank and age, parading up and down

in the most grotesque dresses; while the windows and balconies of the houses are crowded with spectators from the first story to the sixth.

A standard amusement on this occasion, is a battle of *sugar-plums* between the carriage people and the pedestrians, and between those within and those without the houses. Lady Morgan observes, that the white satin robe and gaudy head-dress of a lady in a carriage is exposed to the "pitiless pelting of the storm," showered indiscriminately from all the houses and by the pedestrians on the occupants of carriages, in t' e *form* of sugar-plums, but in the *substance* of plaster of Paris. It appears that the combatants cannot afford real comfits, and therefore make use of "confitti de' gesso," or plaster comfits. A recent tourist remarks:—

Strangers seldom attack you; but those who know you seldom let you escape; and we, being unmasked and in an open carriage, were generally most unmercifully pelted by masked antagonists. We took care to return the compliment with interest,—abundance of this material, which may be called the *wit* of the masquerade, being on sale, so that you can never be at a loss for a repartee. Sometimes, indeed, we were assailed by an unexpected volley from some passing pedestrian mask, on whom we could *at* the time, inflict no retaliation; but we never failed to mark him as a subject for future retribution, when the course of the promenade brought him again within our reach. It often happens in the many stops of the carriages, that two in the opposite lines begin the assault, and quantities of ammunition being poured in, a furious pitched battle is carried on, until the cavalcade being put in motion again, separates the combatants. We sometimes received a discharge of *real* comfits; but they came "like angels' visits, few and far between."

At the Ave Maria, or fall of day, a cannon is fired off as a signal to clear the streets and prepare for the horse-races. The carriages file off by the nearest avenues, and their occupants hasten into the houses; and in a short time, windows, balconies, chairs, scaffolds, and foot pavements, are crowded to suffocation. A temporary barrier, erected near the Porta del Popolo, is the point from which the race commences. At the discharge of a cannon this barrier is withdrawn, and the whole competitors fly off at full speed. The course, which is along the Corso, and consequently paved, is about a mile in length, and the horses are stopped by a piece of cloth which is suspended across the street, near the Venetian Palace, at the *Ripréșa de' Barberi*, so called from Barbary horses having been the original racers.

The horses are small, and are of little value. They have no rider, but are placed each in a stall behind a rope, which is dropped as soon as the moment for starting arrives. A number of tin-foil and paper flags are stuck over their haunches; small pointed bodies are placed to operate as a spur; and the noise and the pain of these decorations serve to put the horse on his full speed, to which he is further urged by the shouts of the populace. Some writers have talked of the high spirit and emulation of these horses; but the truth is, that their impetuosity in the race is not so much owing to their natural spirit, as to the agony occasioned by the goads, or balls covered with sharp spikes of metal, suspended from their backs, which at every motion fall heavily on the sides of the poor animal, and wound him distressingly. Sometimes six or eight of these goads are beating in his bleeding sides at once; and as if this were not torment enough, fire is likewise applied to them; so that the poor animals, furious under these tortures, often cannot be restrained by the force of eight or ten men from leaping the cords which confine them at the entrance of the Corso. It often happens that some of the horses run aside down other streets; and on one occasion the spectators were wholly disappointed, for all the horses turned off together at a favourable avenue. The prize run for is generally a rich piece of velvet.

The carnival terminates, or is *put out*, as it is termed, on Shrove Tuesday, by a most whimsical ceremony. Immediately after the horse-race has terminated, the whole of the houses are illuminated, and all the persons, whether on foot or in carriages, hold lighted tapers in their hands, wax, if they can afford it, or else tallow. After being in this position some time, the troop of cavalry march down the Corso; and this is the signal for every one to blow out his neighbour's taper, and to keep in his own. An intelligent traveller has observed, that though the absurdity of the whole affair struck him forcibly, yet the irresistible drollery of the scene made it quite impossible to philosophize on it at the time. In a short time, all is in darkness, the troops proceed to their barracks, and the multitude proceed to their own homes, where feasting and merriment is kept up.

This ends this extraordinary festivity, one which reflects but little credit on the good sense and good feeling of those who uphold it. The buffoonery and childish amusement of the masking, and the cruelty to the horses in the races, are not the only objectionable features in the affair. The carnival is always ushered in by an *execution*, for if there are any criminals destined to condign punishment, they are reserved for this occasion. And if it is repulsive to our notions of humanity to usher in a period of extravagant hilarity and joy by the ceremony of depriving some wretched creatures of existence, it is equally repugnant to our religious feelings, that the day after these fooleries have terminated, witnesses a display of all those solemn rites which the Romish Church ordains for the first day of Lent, or Ash Wednesday. Of the rites themselves, we do not propose now to speak; we merely offer a remark, that the carnival is but a poor preparation for that state of mind consonant with the season of Lent.

SEA-KALE, OR COLE-WORT*.

SEA-KALE is a native of the south of Britain, and of some parts of Ireland. It is found wild on sandy shores, and has long been used by the poor in the neighbourhoods where it is plentiful, as a substitute for young cabbage. A very fine sort is found on the Hampshire coast, near Calshot Castle: it also grows in much abundance, and is valued as a culinary vegetable, in the neighbourhood of the Bay of Dublin. It is now eighty years since the cultivation of it in gardens began to occupy some attention, but it was not till the year 1794 that it came into high repute. It was much recommended by Dr. Curtis, who wrote a treatise on the subject, and by Dr. Lettsom, who had even at an earlier period advocated the use and cultivation of the plant; and being found an excellent substitute for forced asparagus, it began to be much esteemed and generally cultivated.

Sea-kale has been spoken of as the most wholesome of vegetables, containing all the good qualities of the cabbage tribe, and acting as a sweetener and purifier of the blood: it must, therefore, be exceedingly valuable in a country like ours, where the consumption of animal food is so enormous. The ease and certainty with which it may be raised, so as to have a supply during the winter season, is a great recommendation to this plant; and instead of being injured by forcing in hot-beds, or otherwise, the flavour is thereby much improved. The plant will grow luxuriantly in any soil, provided it be loose enough; but

* The word cole, or kale, is derived from the Anglo-Saxon *cayl* o *cayl-wort*. *Kohl*, or *kol*, is the German for cabbage.

as the mild flavour of the vegetable is destroyed by allowing it to attain to a very large size, a poor and sandy soil must be selected, and care must be taken to prevent the access of any substance which will be likely to destroy the purity and healthfulness of the plant.

Sea-kale may be propagated in three ways,—by seeds, by slips, and by pieces of the root; but the propagation by seed seems to be the most preferable method. A bed may be prepared on any open part of the garden, composed chiefly of sea or river-sand, to the depth of twelve or fifteen inches. From the middle of March to the end of April the seed may be sown, by dropping it along the middle of the bed in patches, two feet from each other, with three or four good seeds in each place. The crowns of the young plants should be kept as low and near together as possible, for the purpose of covering them with pots or otherwise, when necessary. They will want but little attention during the summer; the keeping them free from weeds and decayed leaves is sufficient. As winter approaches, a little earth or sand should be thrown over them, and through this layer of sand the young eatable shoots will protrude the following year. It will not be desirable to cut largely from the bed the second year; but if the plants are strong and healthy, a few dishes may be taken without injury. In order to obtain plants which shall last for eight or ten years, and still produce good sprouts, another bed should be prepared early in the spring of the second year, where the seedlings may be planted in ridges, and at a distance of two feet and a-half from each other. The strongest plants must be selected for this purpose, and their crowns set two inches below the surface of the bed. One of the most common modes of getting an early growth of the shoots, is to cover the crowns of the plants with some light sandy soil, and then place large garden flower-pots over them, and heap upon these, and around them, a layer of manure which has been previously prepared by frequent turnings, so that the rank steam and heat may be dissipated. The pots should be sunk a little way into the earth, and the holes stopped, so that any steam arising from the heating materials may not enter. Care should be taken not to make the heat too strong, and to this end the bed should be frequently examined, and the covering regulated according to the state of the weather. When the plants are found to have sprouts from six to eight inches long, they may be cut for use as close to the crown as possible, but without disturbing the young shoots that are round it. The crowns are then covered with earth, and the flower-pots and manure replaced: thus the plants will remain in a vigorous state of growth for six weeks from the first cutting, when they will probably have done their best, and it will become necessary gradually to remove their covering, that they may by slow degrees be accustomed to the colder air without. When the plants are entirely uncovered, two or three inches of good manure placed on the bed will strengthen them and enable them to bear forcing on the following winter.

Sea-kale may be conveniently raised in pots, either in a hot-bed, or in any warm corner of a kitchen. Good healthy roots must be selected, and covered with light earth or sand; another pot of the same size inverted over the first; and in this dark prison the shoots will grow as delicately, though not as abundantly, as in the way before described. In whatever way sea-kale is raised, it must never be allowed to come in contact with coal-ashes, or anything which will give it a disagreeable taste; and we again repeat that it is quite necessary for the preservation of purity of flavour, that the soil in which it is cultivated should be a very poor one.

It was a remark of the late Dr. Curtis, that the cottager might with trifling expense and little trouble regale himself with a dish of this wholesome vegetable, for many weeks throughout the Spring, at which time it is of the greatest efficiency, and, with the rhubarb, may save many a pound for medical attendance; besides, he can say with some degree of pleasure, "I grow my own medicine."

BOTANICAL QUESTIONS.

WHAT is the sociable tree? and the dancing tree?
And the tree that is nearest the sea?
The most yielding tree? the busiest tree?
And the tree where ships may be?

The languishing tree? the least selfish tree?
And the tree that bears a curse?
The chronologist's tree? the fisherman's tree?
And the tree like an Irish nurse?

What's the tell-tale tree? the traitor tree?
And the tree that is warmest clad?
The layman's tree? and the housewife's tree?
And the tree that makes one sad?

What's the tree that with death will benight you?
And the tree that your wants will supply?
The tree that to travel invites you?
And the tree that forbids you to die?

What tree do the hunters resound to the skies?
What brightens your house, and your mansions sustain?
What urged the Germans in vengeance to rise,
And fight for the victim by tyranny slain?

The tree that will fight? and the tree that obeys you
And the tree that never stands still?
The tree that got up? and the tree that is lazy?
And the tree neither up nor down hill?

The tree to be kissed? the dandiest tree?
And what guides the ship to go forth?
The tree of the people? the unhealthiest tree?
And the tree whose wood faces the north?

The emulous tree? the industrious tree?
And the tree that warms mutton when cold?
The reddish-brown tree? the reddish-blue tree?
And what each must become ere 'tis old?

The tree in a bottle? and the tree in a fog?
And the tree that gives the joints pain?
The terrible tree when schoolmasters flog?
And what of mothers and child bears the name?

The treacherous tree? the contemptible tree?
And that to which wives are inclined?
The tree which causes each townsman to flee?
And what round fair ancles they bind?

The tree that's entire? and the tree that is split?
The tree half given to doctors when ill?
The tree that we offer to friends when we meet?
And the tree we may use as a quill?

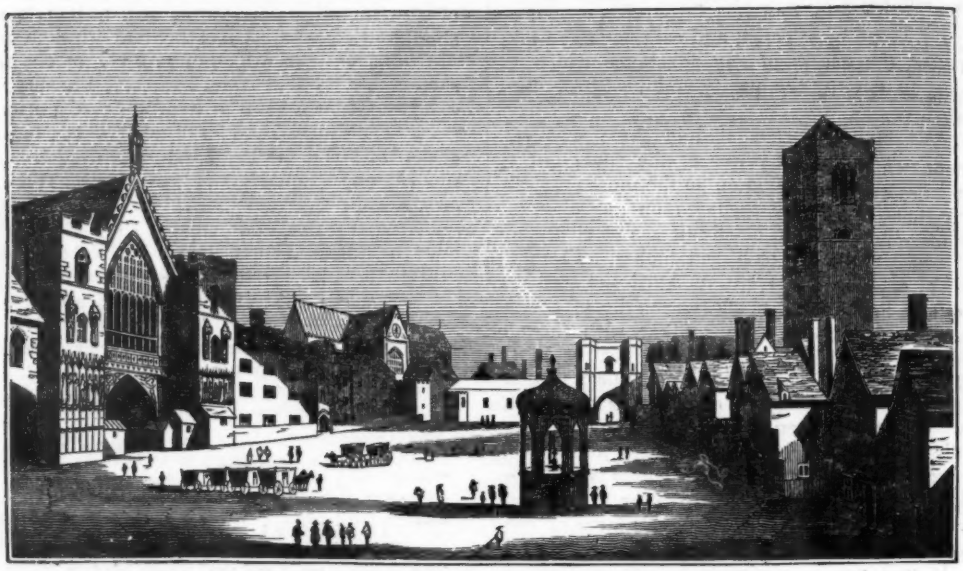
The tree that's immortal? and the trees that are not?
And the tree that must pass through the fire?
The tree that in Latin can ne'er be forgot?
And in English we all must admire?

The Egyptian Plague tree? and the tree that is dear?
And what round itself does entwine?
The tree that in billiards must always be near?
And the tree that by cockneys is made into wine?

A RESERVED man is in continual conflict with the social part of his nature, and even grudges himself the laugh into which he is sometimes betrayed.——SHENSTONE.

GRATIANO speaks an infinite deal of nothing, more than any man in all Venice: his reasons are as two grains of wheat hid in two bushels of chaff; you shall seek all day ere you find them; and when you have them, they are not worth the search.——SHAKSPEARE.

WESTMINSTER HALL, AND ITS HISTORICAL ASSOCIATIONS. No. II.



WESTMINSTER HALL IN THE TIME OF JAMES THE SECOND.

WE resume our notice of this noble hall, which we have brought down to the early part of the fourteenth century.

In the year 1356 occured one of those events which are so seldom seen in modern warfare,—the capture of a king in the field of battle, and his conveyance to the land of the conqueror. In that year the battle of Poictiers in France, was fought by the English, headed by Edward the Black Prince, son of Edward the Third, and the French, under their king, John. John was taken prisoner, and brought to England; and a grand procession was made to Westminster Hall, where King Edward received his unfortunate brother monarch. A splendid cavalcade passed through Southwark, London, and Westminster, in the way to the hall, King John being clothed in royal apparel, and mounted on a cream-coloured charger, with splendid trappings; while his conqueror, Edward the Black Prince, who had many generous points in his character, rode by his side on a little black horse, simply caparisoned. At noon the cavalcade reached Westminster Hall, where King Edward was seated on his throne surrounded by his prelates and barons. When the French king entered, Edward descended from the regal seat, received his prisoner with courtesy and attention, and invited him to a magnificent banquet. King John was afterwards removed as a prisoner to the Savoy Palace in the Strand.

A curious instance of an interview between a king and his nobles took place in the hall in 1387. Richard the Second had embroiled himself with his nobles, and to settle some differences which existed between him and them, he agreed to have a conference with them in Westminster Hall. The barons

> Gathered their power together, determining (at the approaching interview) to talke with the king with their armour vpon their backes, for their more suretie.

They assembled in arms, with their retainers, in Hornsey Park, avoided an ambush laid for them at the Mews near Charing Cross, (the reader will probaly suppose that Charing Cross in 1387 and 1839, presented somewhat different appearances), and entered Westminster Hall.

The King, when he heard they were come, apparelled himselfe in his kinglie robes, and with his sceptre in hand, came into the Great Hall at Westminster. The Lords, as soone as they had sight of him, made to him their humble obeisance, and went foorth till they came to the nether steps going vp to the king's seat of state, where they made their second obeisance; and then the king gave them countenance to come neerer to him, and they so did, kneeling downe before him, and forthwith he rose from his place, and lovinglie welcoming them, tooke each of them by the hand, and that doone sate him downe againe.

The particulars of the interview are of no interest to our present subject.

Westminster Hall was the scene of the very important event of the deposition of Richard the Second. We cannot enter into the political and civil discords which marked the end of his reign; it must suffice to say, that he was compelled to give in his resignation of the crown; and a parliament was held in the Hall on September 30th, 1399, for the purpose of receiving that resignation. The Hall was sumptuously fitted up, seats being provided for the prelates, the peers, and the commons,—the royal seat being left vacant. After the Archbishop of York had read the renunciation of Richard, the Archbishop of Canterbury demanded of the assembly whether they were willing to receive the renunciation. This was answered by acclamation in the affirmative. The Duke of Lancaster then rose, and stated the grounds on which he claimed a right to the throne. This claim having been admitted by the assembly, he was led to, and seated upon the throne by the two archbishops; after which the primate and the duke respectively addressed the assembly; and the duke became from that moment acknowledged as Henry the Fourth of England. Some time afterwards he was crowned, and his coronation feast held, according to custom, in the Great Hall. Parliaments were also very frequently held in the Hall about that period.

A few years before this period, the Hall appears to have undergone repair. Stowe writes:—

> This great Halle was begunne to be repayred in the yeere 1397, by Richard the Second who caused the wals, windowes, and roofe to be taken downe, and new made, with a stately porch and divers lodgings of a marvailous worke, and with great costs. All which he levied of strangers banished, or flying out of their countries, who obtained licence to remaine in this land by the king's charters, which they had purchased with great summes of money: John Bottrell

being then clarke of the workes. This hall being finished in the yeere 1398, the same king kept a most royall Christmas there, with dayly justings, and runnings at tilt; whereunto resorted such a number of people, that there was every day spent twenty-eight or twenty-sixe oxen, and three hundred sheepe, beside fowle without number.

The side walls of the Hall were carried up two feet higher than they had previously been, at an expense of *twelve pence* per foot for the additional wall. The Parliament which deposed Richard the Second was the first one held in the Hall after it had been repaired by that monarch.

We must now pass over several reigns, and shortly allude to the coronation of the Queen of Henry the Seventh, on Nov. 25, 1487.

The Queen came from Greenwich to the Tower by water, where—

The King's highnes welcomed her in such manner and forme as was to all estates and others there being present, a very good sight, and right joyous and comfortable to beholde. And in diuers places of the citie were ordeynid singing children, some arrayed like angelles and others like virgins, to sing sweete songes as her Grace passed by. On the morrow the Queen came forth of Westminster Hall, from the which place to the pulpit in Westminster Church, she went upon new baye clothe; but, more pitie, there was so moche people inordinately pressing to cut the baye-clothe that the Queen went vpon, that certin persones in the presse were slain, and the order of the ladies following the Queene was broken and distrobled.

After the ceremony of the coronation in the Abbey, a grand entertainment was held in the Hall, at which the Queen presided.

We have spoken of an inundation by which Westminster Hall was flooded. There have been two or three subsequent instances of a similar annoyance. Stow tells us, "that on the 30th September, 1555, by occasion of great winde and raine that had fallen, were such fluds, that on that morning the palace at Westminster, and Westminster Hall, was overflowen with water unto the stair-foote going to the Chancerie and King's Bench, so that when the Lord Mayor of London should come to present the sherifes to the barons of the Exchequer, all Westminster Hall was full of water." Twenty-four years afterwards, there was a heavy fall of snow which covered the streets of London to the depth of between two and three feet; a few days afterwards, a thaw ensued, which, together with heavy rain, caused such high floods, that the marshes and low grounds became inundated, and the water rose so high in Westminster Hall, that fishes were found there after the waters had subsided.

The reader will understand that we have professed to give only a few of the *historical* associations connected with Westminster Hall: the *legal* associations (on account of the Hall having been for so long a period the chief seat of justice) would form a subject altogether too vast for us to enter upon here, and we must not attempt it. But we find that the historical events in which the Hall has occupied a place, diminish in number as we approach in modern times; and the reason is this, that when the sovereign ceased to reside at the Palace at Westminster, in consequence of Whitehall and other palaces being built, the Hall necessarily lost much of its importance, while some of the other parts of the Palace became appropriated as houses of legislature, &c. Stowe says, "A great part of this palace at Westminster was once agayne burnt in the yeere 1512, the fourth of Henry the Eight; since the which time it hath not been re-edified: onely the great Hall, with the offices neere adjoyning, are kept in good reparations, and serveth, as afore, for feasts at coronations, arraignments of great persons charged with treasons, keeping of the courts of justice, &c."

The last "feast at coronation" which occurred in the Hall was in the reign of his late Majesty George the Fourth; and in case any of our readers should be curious in the statistics of eating and drinking on such state occasions, we will subjoin a list of the articles forming the "bill of fare," on the 19th July, 1821. 7442 lbs. of beef, 7133 of veal, 2474 of mutton, 250 of suet, 1730 of bacon, 550 of lard, 912 of butter, 20 quarters of house lamb, 20 legs of house lamb, 5 saddles of lamb, 55 quarters of grass lamb, 166 lambs' sweet-breads, 389 cow-heels, 400 calves' feet, 160 geese, 720 pullets and capons, 1610 chickens, 520 fowls, 8400 eggs, 160 tureens of soup, 166 dishes of fish, 80 of venison, 160 of vegetables, 640 of pastry, 400 of creams and jellies, 160 of shell-fish, and 480 boats of sauce. The wine provided amounted to 100 dozen of champagne, 20 of burgundy, 200 of claret, 50 of hock, 50 of moselle, 50 of madeira, and 350 of port and sherry. There were likewise 100 gallons of iced punch, and 100 barrels of ale and porter. The number of dinner plates was 6794, of soup plates 1406, and of dessert plates 1499.

The masterly timber roof of the Hall was thoroughly repaired during the closing of the Hall, preparatory to the coronation alluded to above. Forty loads of well-seasoned oak, obtained from broken ships, were employed in renewing the decayed parts, and in perfecting the whole.

About six or eight years ago, the internal stone work was renovated. The old facings of the walls were cut away, and a six inch thick layer of new stone laid upon them. The cornice, the corbels, the armorial devices and sculptures, the great south window, the lower windows, and the niches, were all likewise renovated. The floor was lowered twelve inches, and was newly paved in an uniform manner with stones nearly two feet square.

The details into which we have entered will serve to show that there are few buildings now existing in London which are connected with so many associations of past ages as Westminster Hall.

Light passes from the sun to the earth, a space of ninety-five millions of miles, in eight minutes, and the beams of the smallest taper are visible at sea, in a dark night, for at least three miles: so that the particles of light instantaneously fill a spherical space of six miles in diameter, or 1,130,976 cubical miles.

Instances of the exquisite subtlety of nature are infinite. That so small a drop of ink in a pen should be drawn out into so many letters or lines, as we find it; that silver, gilt upon its external surface, should be drawn to such a vast length of gilded wire; that so very small a worm as that found in the skin should have a spirit, and a peculiar structure and organisation of different parts; that a little saffron should tinge a whole hogshead of water; that a little civet or musk should fill a large chamber with its odour; that such a great cloud of smoke should be raised from a little incense; that the exact differences of sounds should be every way conveyed through the air, and even through the holes and pores of wood and water, (though much weakened, indeed, in the passage,) and be reflected with great distinctness and velocity; that light and colour should so suddenly pass through such a bulk of solid matter, as glass; or of a fluid, as water; yet so as at the same time to convey a great and exquisite variety of images, even though the light suffers refraction and reflection; that the loadstone should operate through all kinds of bodies, even the most compact and solid; and what is still more wonderful, that in all these cases the action of one thing does not greatly hinder the action of another, in a neutral or indifferent medium, such as the air is. Thus cold, heat, and magnetical virtues, all pass through the air at once, without obstructing one another, as if each of them had its own separate way or passage, so as to prevent impinging against, meeting with, or obstructing one another.—Bacon.

THE ART OF JAPANNING.

II

WE will now describe the method of producing various coloured Japan grounds.

For Black.—Grind either lamp-black or ivory-black with spirits of turpentine, mix it to a proper consistence with the shell-lac varnish, and spread it on the article. Ivory-black is esteemed better than lamp-black.

For Red.—Use vermilion in the same manner, but if the tint is to be very brilliant, mix it with the mastic varnish instead of shell-lac. If the vermilion by itself be too scarlet, mix it with fine red lake, or carmine.

For Yellow.—Use king's yellow in the same manner.

For Blue.—Use bright Prussian blue, or verditer, but if the shell lac varnish be used, it considerably diminishes the brilliancy of this colour. For a bright blue therefore the mastic varnish must be used.

All other colours may be produced by proper mixtures of these, but for *Orange*, red orpiment or realgar (the red sulphuret of arsenic), is preferable to any mixtures.

A fine *Green* is produced by mixing purified verdigris with king's yellow, and sometimes it is spread over a gilded surface, which gives it a peculiarly brilliant effect.

The most difficult of all colours to produce in japan work is *White*. Shell lac varnish cannot be used for white grounds, because it has a slight tinge of yellow. When hardness is not an object of importance, the basis for a white ground may be made by dissolving gum animi in old boiling poppy or nut oil, but this is generally too soft and liable to injury, and therefore the mastic varnish described above is generally used. The best colouring matter for it is made of flake white, or white lead, well washed, ground with the sixth of its weight of starch, and dried.

A kind of marbled ground is sometimes produced by dropping small quantities of various coloured grounds on the surface of water, on which they float and spread out, often forming beautiful arborescent figures. The article is then dipped into the water, and thus the figures are transferred to it, as in making marbled paper. This mode of japanning was much practised formerly and was called *the dip*.

Another beautiful kind of variegated ground, is that which resembles tortoise-shell. It is thus produced. Mix vermilion with shell-lac varnish to the proper consistence, and lay this on the parts intended to appear like the semi-transparent parts of the tortoise-shell. Instead of shell-lac varnish, drying oil very much diluted with oil of turpentine, may be used. When this vermilion is dry, lay on a coat of a varnish prepared as follows. "Take one gallon of good linseed, and half a pound of amber; boil them together till the oil becomes very brown and thick; strain it then through a coarse cloth, and set it again to boil, in which state it must be continued till it acquire a consistence resembling that of pitch." Then temper it with oil of turpentine till it be fit for use. When this has been laid on, the work is kept for three or four weeks in a stove, exposed to a very strong heat, which makes it extremely hard, and it is then ready to receive painted or gilded figures, after which it must be again exposed for some time to a gentler heat.

The mode of laying on the other grounds described above is to give the article two thick but even coats of the coloured ground, laid on with a camel's hair brush, and dry the work thoroughly in a stove. It is then ready for the painting, which is performed in three different ways: viz., in oil, in gum water, or size, and in varnish.

The method of painting in oil is not so tedious or difficult as that in varnish, and it is more durable than water colouring. Of course only those pigments can be used which are commonly called oil colours, and they are mixed with a kind of oil called japan gold size, which is tempered to a proper consistence by being diluted with spirits of turpentine. The japan gold size is made by boiling a pound of linseed oil, and while it is boiling adding gradually four ounces of powdered gum animi, stirring till the gum is dissolved. The boiling is then continued till the whole becomes tolerably thick, when it is strained through a coarse cloth and is fit for use.

When figures of gold or silver or any other metal are required, they are drawn with this gold size, and when almost dry, the metal is applied in the form of dust, which adheres to the size very tenaciously. Sometimes an entire ground of gold is used, which has a gorgeous appearance. This is done by covering the work with a coat of japan gold size, and then covering it with gold dust; and when this is dry it is painted upon, like other grounds.

The second mode of painting japan work, namely in water colours, is the least troublesome, but is seldom employed, on account of its short durability. The colours are mixed with gum water; but a better medium is a strong solution of isinglass, mixed with honey or sugar. Sometimes the figures are embossed: and to effect this they are first covered with a body consisting of equal parts of whiting and bole armenian, tempered with gum water. This is repeatedly applied till the figures are raised to the proper height, when they are painted with water colours, mixed with isinglass and honey, as described above.

But the most durable mode of painting in japan is by mixing the colours with shell-lac varnish. This is more tedious than the other two methods, but it has the advantage, that any kind of solid pigments can be used; either water or oil colours. Before being mixed with the varnish, they are ground very fine on a stone, with oil of turpentine. This kind of painting, when properly executed, is as hard and durable as glass or enamel. Besides this mode of ornamenting japan work by painting, it is sometimes made to receive engravings on wood, copper, or steel. The engraving is generally transferred to a white or light coloured ground; and the method is something like that employed in transfering engravings to the surface of pottery or porcelain. The engraving is first printed on fine thin paper, which has been well-sized with isinglass or gum water. When this print is dry, the japan ground is covered with a thin coat of copal varnish, and the printed paper is placed on it, with the printed side downwards; and the print is thus transferred to the japan ground. The paper can afterwards be removed by wetting it with warm water, which dissolves the gum or isinglass, and sets the paper free.

Another excellent mode of printing on japan, is by using, instead of paper, a composition of treacle, glue, and whiting. This compound may be made to resemble in consistence, sheets of Indian rubber. Its flexibility and elasticity therefore enables it to be applied to curved japanned surfaces with advantage.

The last process in japanning consists in giving the finishing coats of transparent varnish or glazing, which not only beautifies the work, but also preserves it from injury. This is always done, whether the ground be left unornamented, or printed, or painted in either of the three methods described above. The

best glazing consists of common seed-lac varnish, prepared as follows. "Take three ounces of seed-lac, and wash it well in several waters; then dry it, and powder it coarsely; put it, with a pint of rectified spirit of wine, into a bottle, so that it be not more than two-thirds full; shake the mixture well together, and place the bottle in a gentle heat, till the seed appears to be dissolved, the shaking being in the mean time repeated as often as may be convenient; and then pour off all the clear, and strain the remainder through a coarse cloth." The mode of applying this is to place the japanned articles in a warm dry place, and lay on the varnish quickly but carefully with a flat camel's hair pencil. The number of coats given must be at least five or six, and the work must of course be allowed to dry between each. Where the ground consists of one uniform colour, its effect is often heightened by mixing a similar colour in the final varnish. Thus, if a vermilion ground be required to be very bright, it is glazed over with fine lake or carmine, mixed in the varnish. And for a similar reason varnish containing smalt, or Prussian blue, is used to glaze over blue grounds; and to heighten yellow grounds, the seed-lac varnish is made with spirit of wine, in which a quantity of turmeric has been dissolved and strained.

The common seed-lac varnish has a slight tinge of yellow, which renders it unfit for glazing over whites and other delicate colours, except yellows, greens, and oranges. In such cases, therefore, whiter varnishes are used, which, however, are always inferior in hardness. A very good but soft varnish of this kind is made from nut oil and gum animi, which has been already described. Another, which is more durable, but not so white, is made of three ounces of gum animi and two ounces of the whitest grains that can be picked out of seed-lac, dissolved in a quart of spirit of wine, and strained. Or seed-lac and gum animi may be mixed in various proportions, according as durability or purity of colour be required most. If the proportion of seed-lac be small in comparison with the gum animi, a little crude turpentine should be added to take off the brittleness.

In all cases, after the final varnish is quite dry, it should be polished for some time with a woollen rag, dipped in the proper polishing powder, dry. It should then be polished for a short time with the powder moistened with oil of any kind, and lastly worked with oil alone, which cleanses it from all impurities, and finishes the whole operation. The proper kind of polishing powder is the common tripoli, or pumice stone, or rotten stone, well powdered; but for whites and other delicate colours a white polishing dust must be used, such as fine putty or whiting. The layer of varnish should of course be so thick, that this polishing may not rub it off, and expose the bare surface of the ground or figures beneath. If on trial this be found to be the case, one or two additional coats of varnish must be laid on. All japanned work is greatly improved by being exposed to a strong heat for some time in a stove. This hardens the varnish.

The common black candlesticks, metal trays, &c., are by no means japanned by this long process. A much simpler method is employed, and the article neither undergoes the preparatory priming nor the finishing varnish, as the black ground has a sufficient polish without it. One mode of effecting this is simply to brush the article over with drying oil, and then to place it in a stove gently heated, and gradually and carefully to increase the heat till the oil assumes a black colour. Another kind of black japan which requires no glazing, is made by mixing japan gold size with lamp or ivory black.

To the ancients who lived in the infancy of the world, or rather in the infancy of man's experience, the question whether the laws of nature have that degree of permanence and fixity that can render them subjects of systematic discussion, or whether, on the other hand, the qualities of natural agents are subject to mutation, from lapse of time, was very rational, and hence their distinctions between corruptible and incorruptible. Thus, according to some of them, the matter only of the celestial spheres is pure, immutable, and incorruptible, while all sublunary things are in a state of lapse; the world becoming paralyzed with age, and man himself deteriorating in character, and diminishing at once in intellectual and bodily stature. But to the moderns, who have the additional experience of some thousand years, the question of permanence is in a great measure decided in the affirmative. The profound speculations of modern astronomers, grounding their conclusions on observations made at very remote periods, have proved to demonstration, that one at least of the great powers of nature, the force of gravitation, the main bond and support of the material universe, has undergone no change in intensity from a high antiquity. The stature of mankind is just what it was three thousand years ago, as the specimens of mummies which have been exhumed at various times sufficiently show. The intellect of Newton, La Place, or La Grange, may stand in fair competition with that of Archimedes, Aristotle, or Plato; and the virtues and patriotism of Washington, with the brightest examples of antiquity.—HERSCHEL.

He that finds truth, without loving her, is like a bat; which, though it have eyes, to discern that there is a sun, yet hath so evil eyes, that it cannot delight in the sun.—SIR PHILIP SIDNEY.

MECHANICAL POWERS.

V.

4. The Inclined Plane.

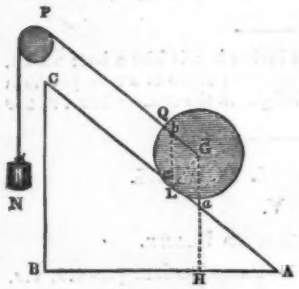
There remain three more mechanical powers, viz. the inclined plane, the wedge, and the screw. They all depend on the same principle,—that of *applying the force indirectly*, or *not in the direction of the effect that is finally to be produced*. Thus, when a mariner wishes to guide his ship towards that point from which the wind blows, instead of proceeding in a straight line, so as to have the whole force of the wind to overcome, he *tacks*, or proceeds in a zig-zag path, which, though longer, is not directly opposed to the wind, and is therefore more easily traversed. In such cases, the longer our path is, or the more indirectly we apply our force, the more easily will the resistance be overcome; and very often, a resistance which could not be overcome by meeting it directly and face to face, will be found to yield gradually and imperceptibly if we insinuate ourselves by a winding or indirect path which is not apparently intended to lead to our goal, but yet gets continually nearer to it.

Of this kind is the inclined plane, which is nothing more than a regular slope, by which heavy bodies are more easily raised than by pulling them up perpendicularly. In this case the resistance to be overcome is the force of gravity, which invariably acts directly downwards. Whenever, therefore, we raise anything, we have to overcome this force of gravity. If we raise a body perpendicularly, we act directly in opposition to gravity. But, if we raise it in a sloping direction, we likewise oppose gravity, though not directly; our path is not in a direction exactly opposite to that of gravity, but rather sideways to it; and therefore we do not feel the effect of it so sensibly; and though the plane does gradually get higher and higher, yet the gravitating force is in proportion overcome. But this increased ease of progress is made up for by the increased length of the plane; so that the same rule holds good in this as in the other

mechanical powers,—there is no real gain of power: it requires no more absolute power to walk a mile directly in opposition to the wind, than to get to the same spot by *tacking*, or to go by a longer and more winding path not directly opposed to the wind; for though easier, the path is longer, and though it requires less exertion, that exertion must be kept up for a longer period. And so with the inclined plane; it requires as much absolute power to advance a weight up an inclined plane of any length to a height of ten feet, as to pull it at once up the ten feet perpendicularly.

Nevertheless, a small weight may be made to balance a larger by means of the inclined plane; so that (in the common acceptation of the phrase) *power is gained.* To prove this, let the reader take an inclined plane of any kind, such as a writing or reading desk, or a table which has a leaf turning up on a hinge, to occupy less room. But the latter is preferable, because the degree of inclination or sloping may be altered at pleasure. A small wheel or roller will of course roll down this inclined plane; attach to the axle of the wheel or roller a string, passing over a pulley, as at P in fig. 28, and to the other end of the string attach a weight N. If this weight N be as heavy as the roller G, they will not balance each other, but N will preponderate; and it will be found that any weight at N will balance a considerably larger weight at G. The proportion between the two weights will be the same as that between the lengths of their two paths, or between C A and C B. So that if the inclined plane C A be twice as long as the perpendicular line C B, which is called the *altitude*, then the weight or power N need be only half as great as the resistance or load G. And if it be ever so little greater than this, it will raise the load G.

Fig. 28.

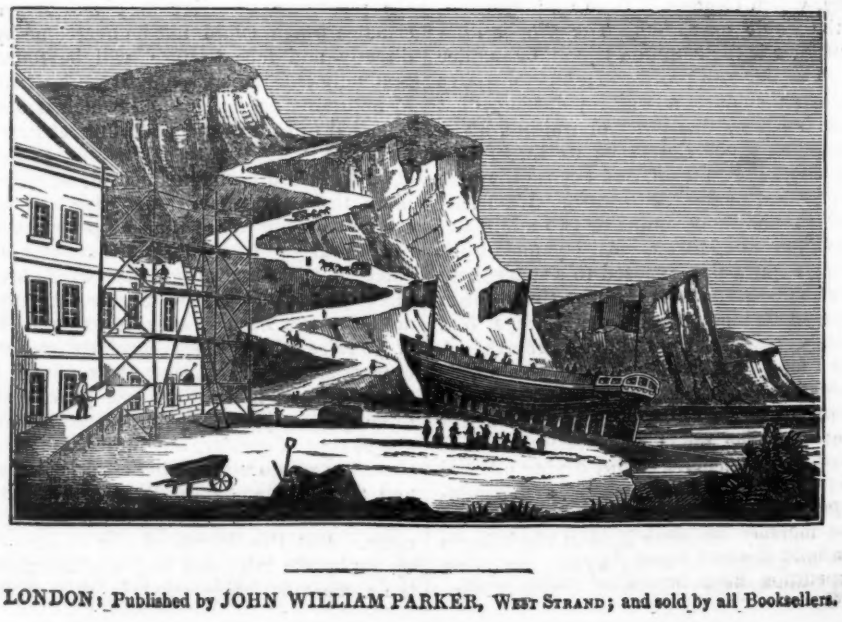


Now here, the reader will exclaim, is an exception to the law that power is never gained without losing velocity, for the velocities of the two bodies N and G are evidently equal, and yet power is gained! It is true that the actual velocities of the two bodies are equal, but our object is not simply to *move* the body G from A to C, but to *raise* it from the level of A to the level of C. It is only its *rising progress*, therefore, that must be taken into account.

When the mariner in proceeding on his voyage is obliged to tack, he does not measure his progress by the whole space which the ship passes over, but only by the actual approach which he makes to the end of his voyage. So we must measure the velocity of the body G, not by the whole space which it *passes over*, but by the space which it *rises* towards the level of C. Thus we shall find that the *perpendicular velocity* of the two bodies, or their *rising and sinking*, is by no means equal; for while the power N descends from C half way to B, the resistance G only rises up half the plane A C, or to half the height that N sinks. Thus half the velocity is lost, and therefore the power must be doubled.

Of course, the longer the plane C A is, in comparison with its altitude C B, the more will the power be increased, or the more easily will the resistance be raised. Accordingly, every one knows that the more gradual the ascent of a hill is, the more easily do they ascend it; but then the easier their path is, the longer and more tedious it is.

The inclined plane is, perhaps, of all the mechanical powers the most useful; we use it instinctively like the lever: though we are told that Simon Stevin, of Bruges, first estimated its value in a scientific point of view. We may now see it used almost daily, in raising barrels, or other heavy bodies, into carts and wagons, or out of cellars and warehouses below the level of the ground. If the bricklayer wishes to wheel his materials in wheel-barrows up to his scaffolding, he uses a plank as an inclined plane. Every staircase and every hill, is an inclined plane, the only difference being that the former is broken into a number of horizontal surfaces, to afford a better hold for the feet. In the subjoined cut, the bricklayer's plank and ladder are instances in point. The zig-zag ascent of the hill is an inclined plane; and the inclined plane is likewise used to afford a gradual descent in launching the ship.



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